Patent

NASA Case No.: NPO-20535-2--CU

REMARKS

The applicant has amended claims 1, 11, 12, 14, 16, and 18 in order to clarify the invention and to address indefiniteness issues.

The examiner has objected to the drawings as not showing specific elements within the claims. Applicants believe that the amended claims portray these elements as described below.

First, the examiner states that the "individual interruptable terminal-to-terminal connection" between the transistors in independent claim 10 is not shown (applicants note that this limitation is also set forth in the other independent claims). This limitation is shown in Fig. 2. All of the switches provide an interruptable (depending upon whether the switch is in the open or closed position) connection between the terminals of each pair of transistors (set forth as control terminals in the claims). For example, switch S2 provides an interruptable connection between the terminals of transistor P1 and P3.

Second, the examiner states that the drawings don't show "reconfigurable switches connected to form a series-connected succession" and that in the series a connection between the "first power terminal of one transistor and second power terminal of the other transistor of the pair" is not shown. Applicants have amended the claims to specify that the series-connected succession occurs when the first plurality of switches is in a closed position. Specifically, for example, when switches S2, S10, and S19 are in a closed position, this forms a series of connected transistors P1, P3, N5, and N7. In this series, taking a pair connected by a single switch (P1 and P3 connected by switch S2) P1 is connected to the power terminal 10 (first power terminal) and P3 is connected to the power sink 20 (second power terminal).

Therefore, applicants believe that these objections have been obviated.

Claims 1-20 stand rejected under nonstatutory obviousness-type double patenting as unpatentable over claims 1-9 of U.S. 6,728,666 and over claims 1-35 of U.S. 6,526,556. Applicants have attached terminal disclaimers regarding these patents. The terminal disclaimers obviate these rejections.

Further, claims 12, 14, and 18 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Specifically, the examiner objects to the use of indefinite terms "nearly" and "about" in these claims. The claims have been amended to remove these terms.

Finally, claims 1-20 stand rejected 35 U.S.C. § 103(a) as unpatentable over Levi et al. (U.S. 6,378,122) in view of Sourgen (U.S. 5,258,947) in further view of Layzell, "A New Research Tool for Intrinsic Hardware Evolution, " ICSE98, 1998. Specifically, the examiner states that Levi discloses a genetic algorithm to create evolvable circuits where programmable logic devices are reconfigured to create designs through use of chromosomes that store the genetic code of the circuit design. However, the examiner notes that Levi does not disclose a circuit that includes a programmable mixed analog and digital circuit realized by transistors with coupled source/sink thermals and also does not disclose a programmable circuit array that allows connection of any transistor terminal to any other transistor terminal. The examiner goes on to indicate that Sourgen teaches the former shortcoming of Levi and Layzell teaches the latter and that combining these three references would be obvious to one skilled in the art.

First, applicants have attached a declaration hereto under 37 CFR § 1.131 (and MPEP 715) that removes both the Levi and Layzell references relied upon by the examiner. The declaration, executed by one of the inventors, indicates that the inventors submitted an invention disclosure to the California Institute of Technology (Caltech) that was received by Caltech on September 8, 1998 (see the stamp on the first page in the upper right hand corner)

and included a full description of the invention and an indication of reduction to practice, which is dated September 4, 1998. A copy of the invention disclosure is attached hereto. Because the effective filing date of the present application is September 13, 1999 (which is before the issuance of the Levi patent (4/23/02) and within a year of the publication of Layzell (9/23/98)) and shows a reduction to practice prior to the effective filing date of Levi (2/26/99) and the publication of Layzell (9/23/98), these references are removed as prior art.

Second, even if the references had not been removed as prior art, the combination of the references does not make the present invention obvious as discussed below. Applicants believe that the examiner has misconstrued and improperly combined the Sourgen reference with the Levi and Layzel references. The examiner states that the Sourgen reference discloses a "programmable (reconfigurable) circuit that is realized using a plurality of transistors having terminals coupled via source/sink terminals and a plurality of reconfigurable switches." Applicants believe that the examiner has improperly used "programmable" as an equivalent to "reconfigurable." These two terms, particularly as applied to these two inventions, are extremely different and relate to completely different limitations.

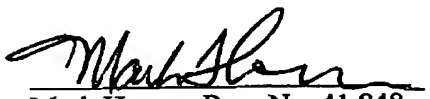
The circuit disclosed in Sourgen is a MOS Fuse that is "programmable" in the sense that one may make an initial selection as to whether a particular transistor is removed (switch open or closed) from a line of transistors to identify a timing for the fuse; however, once that decision has been made and the fuse is burned, there is no way to further change or reconfigure the circuit. The present invention allows one to reconfigure the switches multiple times in order to "test" a variety of configurations. In order for the invention to be properly employed, one must be able to reconfigure the switches to various positions multiple times in order to "evolve" a desired circuit. This would be physically impossible using the disclosure of Sourgen as

suggested by the examiner. Further, the circuit disclosed in Sourgen, being a mere line of transistors (used as a clock), cannot be configured to embody a physical analog or digital part (this is the entire purpose of the present invention). Therefore, applicants assert that combining the other references with Sourgen as the examiner suggests does not produce the present invention and is physically impossible.

Further, the Sourgen invention actually teaches away from employing analog and digitial components together. While Sourgen does teach one analog method of using his invention

Accordingly, applicant believes that claims 1-20 are in condition for allowance and respectfully requests the examiner to withdraw all objections and rejections and allow said claims. Should the examiner need more information regarding this matter or have further suggestions regarding this application, feel free to call the undersigned at 818-354-7770.

Respectfully submitted,



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